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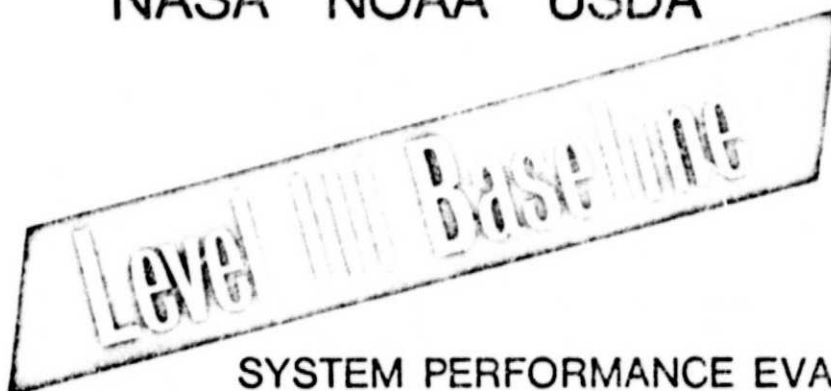
LARGE AREA CROP INVENTORY EXPERIMENT (LACIE)



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SYSTEM PERFORMANCE EVALUATION - REPORT INTEGRATION (SPE-RI) REQUIREMENTS



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TROLLED BY THE LACIE LEVEL III CHANGE CONTROL BOARD.
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RECP FORM AND TRANSMITTED TO R. B. MACDONALD,
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REVISIONS

REV LTR	CHANGE NO.	DESCRIPTION	DATE
		BASELINE ISSUE (Reference CCBBD #III-0001, dtd December 16, 1974)* ORIGINAL PAGE IS OF POOR QUALITY *The changes required by the following RID's which were approved during the LACIE Project Review conducted December 3 through 5, 1974, have been incorporated into this baseline issue of the LACIE Level III Requirements Documents: 0-2 through 0-13, 0-15 through 0-29, and 0-31 through 0-46 1a-1, 1a-2, 1a-10,, 1a-21, 1a-34, and 1a-36 1b-3 and 1b-6 1c-2, 1c-4, 1c-5, 1c-9, 1c-10, 1c-13, 1c-16, 1c-17, and 1c-20 2-12a, 2-13, 2-17, and 2-27 All other changes required by the remaining RID's approved during the Project Review will be incorporated by transmitting an RECP to the LACIE Level III Change Control Board for approval. Each RECP should be accompanied by the appropriate RID Closeout Form as described during the Project Review.	12-16-74

LIST OF EFFECTIVE PAGES

The current status of all pages in this document is as shown below:

<u>Page No.</u>	<u>Change No.</u>	<u>CCBD No.</u>
<u>i</u> through <u>viii</u>	Original	III-0001
<u>1</u> through <u>37</u>	Original	III-0001

FOREWORD

Efficient management of the Large Area Crop Inventory Experiment (LACIE) dictates that effective controls of project activities be established. To provide a basis for effective control, documentation will be prepared, baselines will be established, and changes to the baseline will be subsequently controlled by the proper management levels.

The specific control documents which will be used are defined in the *LACIE Project Plan*, LAP01. All elements of the LACIE project must adhere to these baselined control documents; and where it is considered that the requirements should be changed, the proper change request, accompanied by a full justification, must be submitted to the proper management level in accordance with established procedures. These documents will be maintained current by change notices and revisions, as required. Each change notice and/or revision will reference the applicable Change Control Board Directive (CCBD) which approved the change.

This document, LACIE-00200, Volume VI-B, defines the LACIE System Performance Evaluation - Reports Integration (SPE-RI) requirements and has been prepared in accordance with the *Instructions for Preparation of LACIE Requirements Documents*, LACIE-00100, Revision C, dated November 20, 1974. "Full-Up System" as used in this document is defined as the system required to accomplish LACIE Phase II. In general the approach used in each section is to first specify the requirements of the "Full-Up System" and then to specify the requirements of any interim systems by reference to specific paragraphs in the Full-Up System requirements sections of the document. The LACIE project phases are defined in the *LACIE Project Plan*, LAP01.

The organization responsible for the implementation of each requirement is defined in this document specified on an individual requirement basis. Where the implementation responsibility applies to the complete section, the implementation responsibility is specified after the section title. A "section" for the purpose of designating implementation responsibility is defined as being any numbered paragraph and all numbered paragraphs. Where different implementation responsibilities apply to different portions of a section,

the implementation responsibility is specified on an individual paragraph or sentence basis, as applicable. All implementing organizations designated shall accomplish their implementation activities in accordance with the requirements specified herein.

R. B. MacDonald

R. B. MacDonald

Manager, Large Area Crop Inventory Experiment

CONTENTS

Section		Page
1.0	<u>FUNCTIONAL RESPONSIBILITIES.</u>	1
1.1	GENERAL	1
1.2	SPECIFIC.	1
1.2.1	Functional Responsibilities. . .	1
1.2.2	Operational Responsibilities . .	2
2.0	<u>APPLICABLE DOCUMENTS</u>	3
3.0	<u>FUNCTIONAL FLOW DIAGRAMS</u>	5
3.1	REPORTS INTEGRATION DEVELOPMENT	5
3.1.1	Full-Up System	5
3.1.2	Interim System	5
3.2	REPORTS INTEGRATION OPERATION	5
3.2.1	Full-Up System	5
3.2.2	Interim System	5
4.0	<u>CONSOLIDATED REQUIREMENTS.</u>	9
4.1	FULL-UP SYSTEM.	9
4.1.1	Electronic Daily Reports	9
4.1.2	Manually Acquired Data Base Status Reporting	10
4.1.3	Intensive Test Site Reports. . .	11
4.1.4	Subsystem Generated Output Reports.	11
4.1.5	Statusing and Tracking of Reports.	15

Section	Page
4.2 INTERIM SYSTEM.	16
4.2.1 Phase I-C.	16
4.2.2 Phase I-D.	16
5.0 <u>SUBSYSTEM INPUT REQUIREMENTS</u>	17
5.1 FULL-UP SYSTEM.	17
5.1.1 Generic SPE-RI Input Requirements	17
5.1.2 Statusing and Tracking of Reports.	18
5.1.3 SPE-RI Data Base Interface	19
5.2 INTERIM SYSTEM.	19
5.2.1 Phase I-C.	19
5.2.2 Phase I-D.	20
6.0 <u>SUBSYSTEM OUTPUT REQUIREMENTS</u>	21
6.1 FULL-UP SYSTEM.	21
6.1.1 System Performance Evaluation Reports Integration.	21
6.1.2 SPE-RI Output Products	21
6.2 INTERIM SYSTEM.	22
6.2.1 Phase I-C.	22
6.2.2 Phase I-D.	22
7.0 <u>INTERFACE DOCUMENTS REQUIREMENTS</u>	23
7.1 INTERCENTER CONTROL DOCUMENTS	23
7.2 INTERFACE CONTROL DOCUMENTS	23

Section		Page
8.0	<u>OPERATIONAL REQUIREMENTS AFFECTING THE SUBSYSTEM DESIGN</u>	25
8.1	THROUGHPUT REQUIREMENTS.	25
	8.1.1 Interactive, Real-Time.	25
	8.1.2 Interactive, Monthly Accumulation.	25
	8.1.3 Interactive, Demand	25
	8.1.4 Batch Jobs.	26
8.2	RESPONSE TIME.	27
8.3	RELIABILITY REQUIREMENTS	27
8.4	SECURITY REQUIREMENTS.	27
	8.4.1 Sensitive Data Security	28
	8.4.2 Data Entry/Changeability Security.	28
8.5	DELIVERY REQUIREMENTS.	28
8.6	QUALITY CONTROL REQUIREMENTS	29
8.7	OTHER OPERATIONAL REQUIREMENTS	29
9.0	<u>SUBSYSTEM VERIFICATION REQUIREMENTS</u>	31
10.0	<u>TEST AND EVALUATION</u>	33
10.1	SPE-RI REQUIREMENTS.	33
10.2	ENTERING AND ACCUMULATING DAILY REPORTS STATUS DATA.	34
10.3	REQUIREMENTS AFTER 6 MONTHS' ACCUMULATION OF DATA	34
10.4	SUBSEQUENT DATA ACCUMULATION	34
10.5	REQUIREMENTS FOR HANDLING A 1-YEAR ACCUMULATION OF DATA	35

Section	Page
10.6 FINAL EVALUATION REPORT.	35
11.0 <u>RESEARCH REQUIREMENTS</u>	37
11.1 HARDWARE	37
11.2 SOFTWARE	37

GLOSSARY

ASCS	Agricultural and Stabilization Conservation Service
ASVB	Applications Systems Verification Branch
CAMS	Classification and Mensuration Subsystem
CAS	Crop Assessment Subsystem
COD	Center Operations Directorate
CRT	Cathode-ray tube
DAPTS	Data Acquisition, Preprocessing, and Transmission Subsystem
DSAD	Data Systems Analysis Directorate
EOD	Earth Observations Division
ERAS	Electronic Reports Accounting System
ERTS	Earth Resources Technology Satellite
FSO	Facilities Support Office
GDSD	Ground Data Systems Support Division
GSFC	Goddard Space Flight Center
IMS	Information Management System Subsystem
Interim system	System requirements to accomplish subphases of LACIE Phase I, excluding subphases I-A and I-B
ISRRS	Information Storage, Retrieval, and Reformatting Subsystem
JSC	Lyndon B. Johnson Space Center
LACIE	Large Area Crop Inventory Experiment

LACIE PO	LACIE Project Office
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
PCR	Project Certification Review
PFC	Production Film Converter
RTEB	Research, Test, and Evaluation Branch
S&AD	Science and Applications Directorate
SPE-EA	System Performance Evaluation - Efficiency Analysis
SPE-RI	System Performance Evaluation - Reports Integration
TBD	To Be Determined
USDA	U.S. Department of Agriculture
WMO	Worldwide Meteorological Organization
YES	Yield Assessment Subsystem

1.0 FUNCTIONAL RESPONSIBILITIES

1.1 GENERAL

The SPE-RI subsystem will insure that provisions are made for the generation, statusing, and dissemination of reports within and between subsystems as required to operate the subsystems and evaluate their performance.

1.2 SPECIFIC

1.2.1 Functional Responsibilities

The SPE-RI will be functionally responsible for:

- a. Defining the report types, coordinating formats, and determining the frequency of reports which must be generated for or by LACIE subsystems.
- b. Assuring that provisions are made for collecting, statusing, tracking, indexing, and distributing reports generated in support of the project and providing checkpoints for timeliness of generation and distribution.
- c. Assuring that provisions for historical query of both electronically and manually generated reports are instituted.
- d. Coordinating the definition of format requirements for new types of reporting and assuring compatibility of requests with existing system capabilities.
- e. Assessing the impact of new requirements which are not system compatible and investigating possible alternatives in conjunction with the requester.

- f. Coordinating the compilation of new or custom reports based on the call-up of either real-time or historical data.
- g. Providing for project overview and management reports as required or deemed necessary for the good of the project.

1.2.2 Operational Responsibilities

The SPE-RI will be operationally responsible for:

- a. Providing status and tracking information to LACIE users via status summary reports.
- b. Maintaining workflow overview to insure timely completion of scheduled subsystem reports.
- c. Providing working interface between subsystems in developing workaround methods when schedules are threatened because of system failures or because of input data/processed data anomalies.
- d. Providing support to SPE-EA and Earth Observations Division (EOD) data manager.
- e. Interfacing with project management to develop tools as required to insure adequate management monitoring capability.

2.0 APPLICABLE DOCUMENTS

The following documents are applicable to the extent specified herein:

1. LACIE Project Plan, LAP01, November 18, 1974.
2. Instructions for Preparation of LACIE Requirements Documents; LACIE-C0100, Revision C, November 20, 1974.

3.0 FUNCTIONAL FLOW DIAGRAMS

3.1 REPORTS INTEGRATION DEVELOPMENT

3.1.1 Full-Up System

The functional flow diagram for Reports Integration System development is shown in figure 1.

3.1.2 Interim System

Same as 3.1.1

3.2 REPORTS INTEGRATION OPERATION

3.2.1 Full-Up System

3.2.2 Interim System

To be determined (TBD).

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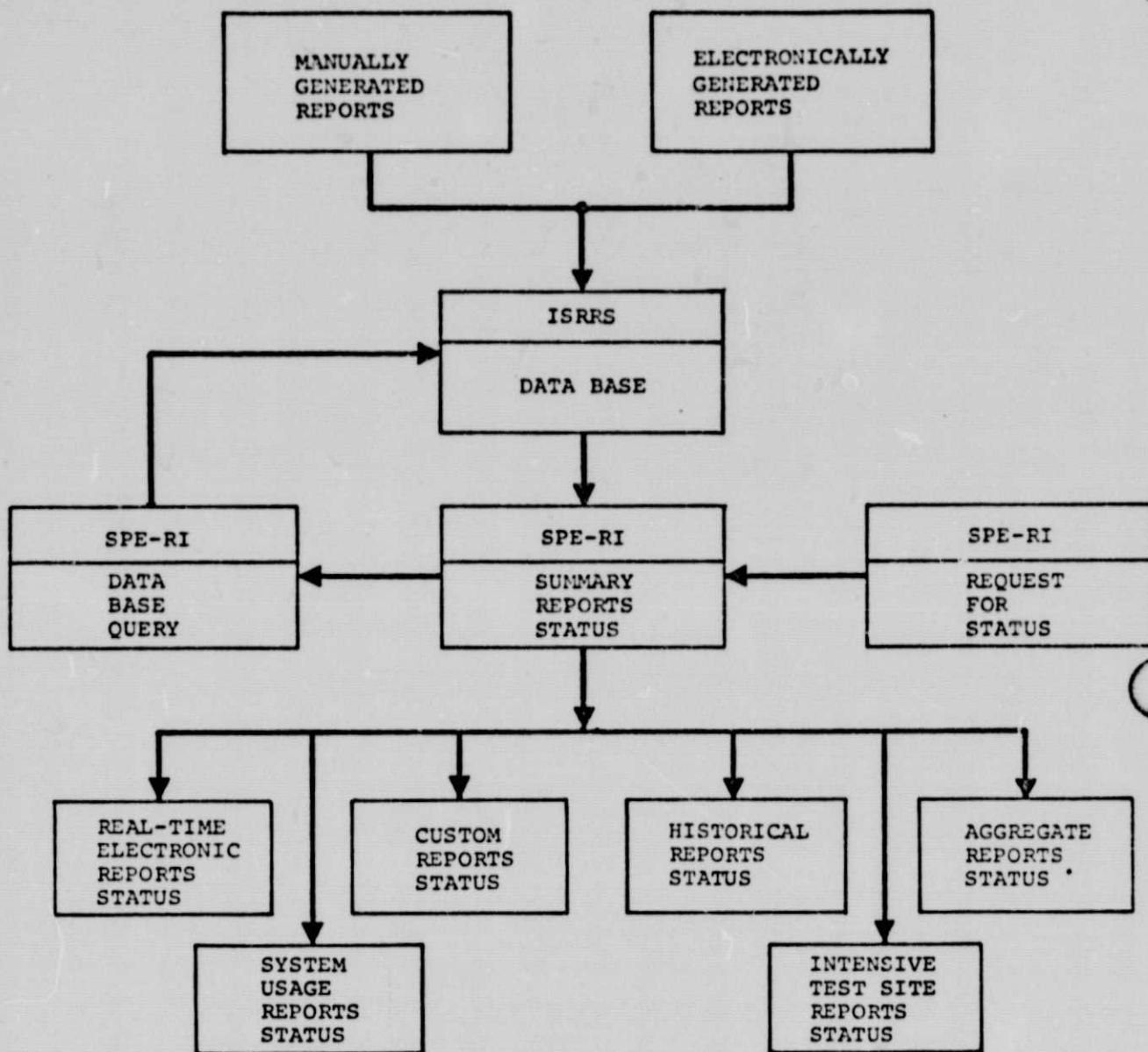


Figure 1. - System performance evaluation reports integration.

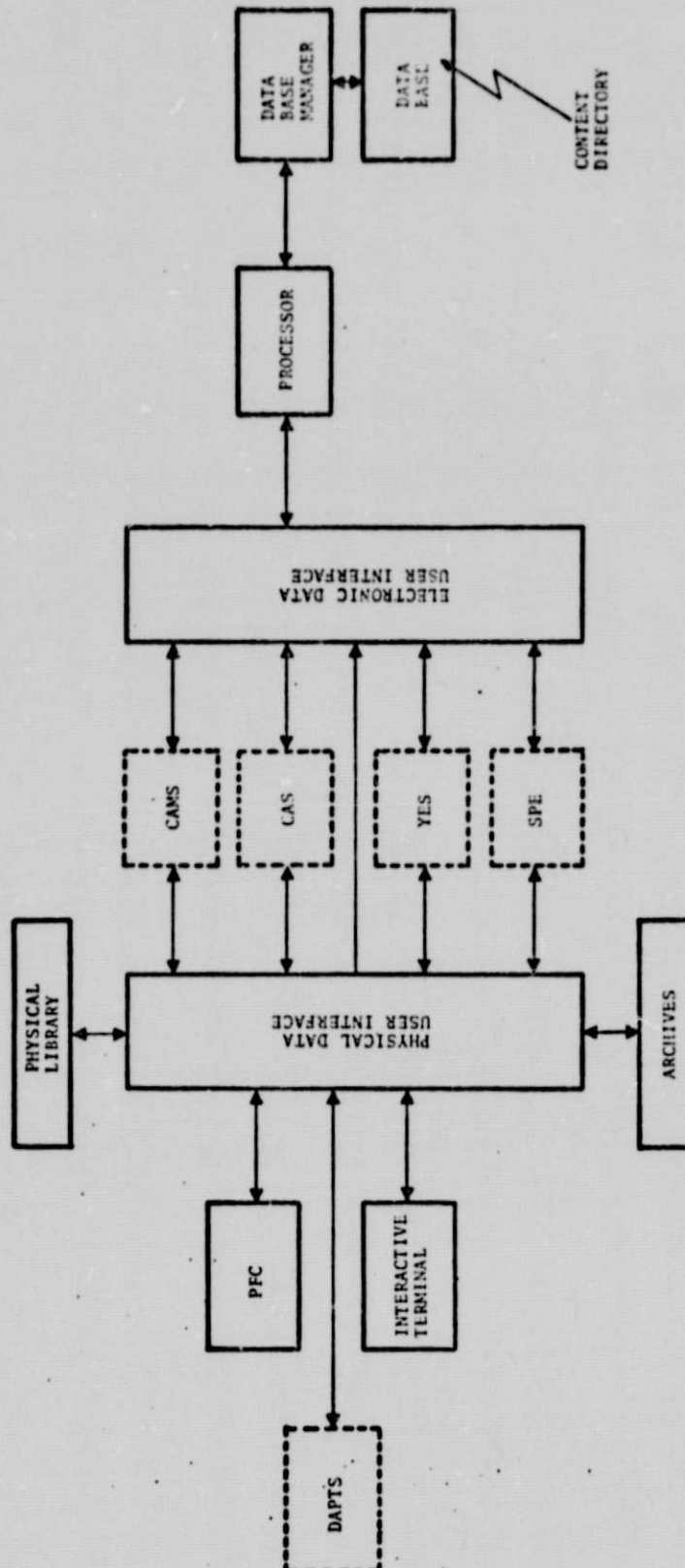


Figure 2.- Functional flow diagram of the Full-Up System.

4.0 CONSOLIDATED REQUIREMENTS

4.1 FULL-UP SYSTEM

The following subparagraphs document the consolidated requirements of the Reports Integration activity for support/products from other LACIE functional elements.

4.1.1 Electronic Daily Reports (Req'd. by CAMS, CAS, and YES; Cat. 1; Impl. resp.: ISRRS)

4.1.1.1 Background.-- The Classification and Mensuration Subsystem (CAMS), the Yield Assessment Subsystem (YES), and the Crop Assessment Subsystem (CAS) have identified requirements for a number of real-time daily electronic reporting types. At this writing, it is assumed that the actual transmission of these reports will be from the generating source to the EOD data manager who will then distribute them to the appropriate subsystems as required. However, a definite requirement exists for a comprehensive system for the status and accountability of electronic daily reports. Since the potential exists for some 30,000 daily report types to be generated annually, it is obvious that an electronic book-keeping and accounting system is required to provide an accurate history of all reports generated for each sample segment.

4.1.1.2 Report types.-- Generic report types requiring status and tracking activity identified to date are as follows:

1. Indexed Data Report
2. Post Classification Report
3. Classification Map
4. Cluster Map
5. Segment Acquisition Status Matrix
6. Other report types TBD

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4.1.1.3 Description of service required.- Since only the Indexed Data Report and the Segment Acquisition Status Matrix are recoverable from the Information Storage, Retrieval, and Reformatting Subsystem (ISRRS) electronic data base, provision must be made for manually recovering all other reports from the ISRRS nonelectronic data base as well as maintaining accountability of report generation and shipment to the Johnson Space Center (JSC)/EOD.

4.1.2 Manually Acquired Data Base Status Reporting
(Req'd. by SPE-RI; Cat. 1; Impl. resp.: ISRRS)

4.1.2.1 Background.- In addition to maintaining an accountability system for electronically generated reports (sec. 4.1.1) an analogous system is required for nonelectronic reports entered into the ISRRS data base.

4.1.2.2 Data sources.- The following are generic data types which must be statused via the ISRRS data base.

1. Crop Calendars
2. Historical Climate Summaries
3. Current Meteorological Conditions Report
4. Summary Data Reports
5. Historical Cropping Practices Report
6. Other data types TBD

4.1.2.3 Description of service required.- As part of its function, the nonelectronic ISRRS is required to provide storage and retrieval of the products listed above and to provide the summary data availability report.

4.1.3 Intensive Test Site Reports Status
(Req'd. by SPE-RI; Cat. 1; Impl. resp.: ISRRS)

It is highly desirable to maintain an accurate accountability of the number and kind of intensive test-site-related reports entered into the data base. The system is identical in concept to that advanced in sec. 4.1.2.

4.1.3.1 Data types.- Generic data types requiring status and tracking activity identified to date are as follows:

1. Agricultural Stabilization and Conservation Service (ASCS) Land Use Inventory
2. ASCS photographs (Field Boundary Survey)
3. ASCS yield determination
4. ASCS periodic observations (Crop Condition Survey)
5. Test site assessment reports
6. Aircraft photograph coverage
7. Synoptic weather data
8. Other site data TBD

4.1.3.2 Description of service required.- See sec. 4.1.2.3). (Req'd. by SPE-RI; Cat. 1; Impl. resp.: ISRRS)

4.1.4 Subsystem-Generated Output Reports
(Req'd. by SPE-RI; Cat. 1; Impl. resp.: ISRRS)

The requirement exists to maintain an accurate accountability for all subsystem-generated reports.

4.1.4.1 Subsystem output report types.- Generic output report types requiring status and tracking activity identified to date are as follows:

1. Electronically Aggregated Reports
2. Monthly Crop Reports
3. Monthly Crop and Assessment of Accuracy and Precision Reports
4. Conventional Crop Report/LACIE Crop Report Comparison
5. Production film converter (PFC) Segment Film Products Report
6. System Usage Reports
7. All other manually or electronically generated subsystem reports required as input to other subsystems or otherwise satisfy LACIE objectives.

4.1.4.2 Description of service required.- Status and tracking of the report types described in section 4.1.4.1 requires that the ISRRS provide a record of each report; the date generated and related TBD key parameters as appropriate. These data will then serve as the premise for the SPE-RI Summary Status Reports. The Electronic Reports Accounting System (ERAS) will require the automatic generation in real-time of a report status record keyed by the completion of each electronically generated report. In addition, ISRRS is required to enter similar data for manually generated reports on a daily basis either through batch jobs or by terminal entry.

The storage and report formats are being finalized, but currently storage and retrieval capability will require a minimum of the following parameters:

- a. Report type
- b. Report number
- c. Date of report
- d. Report media (microfiche, hard copy)

- e. Segment, zone, region, number(s) and/or country involved
- f. Good/no-good code
- g. Releasability code
- h. Releasability downgrading
 - 1. New releasability code
 - 2. Date changed
 - 3. Authority basis for change

4.1.4.2.1 Storage: Physical disc storage areas are required. At this stage, finite definition of storage requirements is difficult to pin down; however, two areas can be described: (a) daily report status accumulation (real-time) within the ISRRS data base and (b) current month report status accumulation in the Reports Integration System ERAS data base (daily automatic dump from the daily report status accumulation).

4.1.4.2.2 Status: Once the internal format can be established, the daily report status storage area can be calculated using the following formulas:

Phase I-C: $(5-10 \text{ segments} \times 4 \text{ rpts.}) + 50 \text{ manual rpts.}$
expected per day

Phase I-D: $(30 \text{ segments} \times 5 \text{ rpts.}) + 25 \text{ manual rpts.} +$
50 aggregated rpts. expected per day

Full-Up: $(100 \text{ segments} \times 5 \text{ rpts.}) + 20 \text{ manual rpts.} +$
160 aggregated rpts. expected per day

- a. The internal format can be established as basically the same requirement as for the daily status except for perhaps a shifting of record control (sorting) by segment number instead of report type/number. The monthly report status storage area requirements can be escalated using the formulas cited above except that each calculated result must be multiplied by 22 - the average number of workdays/month. If seven day/week operations are anticipated, then the multiplier should be increased to 31.

- b. A historical tape will be required in order to dump the current month report status data, and erasure of the disc area for new accumulations will be required. In conjunction with this historical tape and others TBD, temporary disc file space is required to enter tape and/or manually available data and to provide a working area for quarter, semiannual, and annual aggregations of data and for graphic terminal compilation and display of line and bargraphs.
- c. For trend analysis, a generalized statistics software package is required whereby values of 2 or more data parameters may be totaled and used to drive the line and/or bargraph displays cited above. The capability of overlaying (or overwriting) an existing display with additional data is required of the software.
- d. A graphics type terminal and a "total screen" type printer are required for the trend analysis and for graphic compilations of data for use in combined manual/electronic reports.

4.1.4.3 Report headers. - The basic information listed below is required for all the electronic daily report types.

- a. Where multiple reports are contained on a single fiche card, page 1 of that fiche card is to contain an index listing of all segment reports contained on that fiche card.
- b. Only one report type is to be included per fiche; e.g., daily reports and classification maps would not be mixed on the same card.
- c. Where printer listings instead of (or in addition to) microfiche are produced, page 1 of the listing is to contain an index of the sample segments included in the body of the printout.
- d. The header of each fiche card or the first page of each tab run should include as a minimum the following.

1. Microfiche or hard copy record number in the upper left corner: Each microfiche card must also be numbered uniquely in the header to allow for subsequent retrieval from the IMS manual data base:
 2. Date produced - upper right
 3. Type of report - center
 4. Releasability code - upper left
- e. A releasability code for each report type should be devised detailing to whom the report may be distributed and whether or not the information contained in the report is proprietary or otherwise sensitive. This should be predicated on the highest classification of any report contained therein. Procedures for periodic or occasional downgrading and authority to downgrade reports must be provided.

4.1.5 Statusing and Tracking of Reports

4.1.5.1 Background.- Part of the SPE-RI activities require that a system for reporting on the timeliness of report generation and dissemination be instituted. Such a system would allow for the monitoring of the report generation schedules (i.e., frequency, required due dates, etc.). The SPE-RI function is to review this schedule at regular intervals and to report on problem areas or bottlenecks.

4.1.5.2 Information required (Req'd. by SPE-RI; Cat. 1; Impl. resp.: all subsystems; RTEB, ASVB).- At a minimum, each subsystem and the RT&E are required to furnish SPE-RI with both a listing of reports they intend to generate and those they require, the frequency of generation, and a schedule of completion dates.

4.1.5.3 Description of service required.- (a) transactions between subsystems by definition must pass through ISRRS; therefore, ISRRS is required to make provision for recording these transactions in the data base such that SPE-RI can interrogate for status updates. (See sec. 4.1.4.4.) (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS) (b) Transactions from outside (as RT&E reports) do not necessarily have to pass through ISRRS. Accordingly, it is the responsibility of the requesting subsystem(s) to assure that SPE-RI

is suitably apprised of the existence of these reports (Req'd. by SPE-RI; Cat. 2; Impl. resp.: RT&E, ASVB staff).

4.2 INTERIM SYSTEM

4.2.1 Phase I-C

4.2.1.1 Electronic daily reports.- All requirements developed in Sec. 4.1.1 apply for the interim (I-C) system.

4.2.1.2 Manually acquired data base status.- All requirements developed in Sec. 4.1.2 apply for the interim (I-C) system.

4.2.1.3 Intensive test site summary status reports.- All requirements developed in Sec. 4.1.3 apply for the interim (I-C) system.

4.2.1.4 Subsystem generated output reports.- The basic requirements developed in Sec. 4.1.4 apply to phase I-C. From a software development and reports statusing standpoint, the functions to be carried out remain essentially the same as those described in Sec. 4.1.4.

4.2.1.5 Statusing and tracking of reports.- The basic requirements developed in Sec. 4.1.5 apply. All requirements developed in Sec. 4.2.1 apply.

4.2.2 Phase I-D

All requirements developed in Sec. 4.2.1 apply.

5.0 SUBSYSTEM INPUT REQUIREMENTS

Inputs required by the SPE-RI from other LACIE subsystems and/or support elements are defined in the following subparagraphs.

5.1 FULL-UP SYSTEM

5.1.1 Generic SPE-RI Input Requirements (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS)

5.1.1.1 Background.- The SPE-RI has the responsibility to status and track all data products input to the LACIE system and all subsystem-generated output reports required as input to other subsystems or otherwise required to satisfy LACIE objectives. In order to meet this requirement, SPE-RI must maintain cognizance of all data base transactions involving reports/products generated.

5.1.1.2 Reports and data products requiring SPE-RI support.- Those report types and data product types requiring status and tracking activity by SPE-RI identified to date are as follows:

- a. Electronic Reports
 - 1. Indexed Data Report
 - 2. Post Classification Report
 - 3. Classification Map
 - 4. Cluster Map
 - 5. Segment Acquisition Status Matrix
- b. Manually acquired reports
 - 1. Crop Calendars
 - 2. Historical Cropping Practices Report
 - 3. Historical Climate Summaries
 - 4. Current Meteorological Conditions Report
 - 5. Summary Data Report
- c. Intensive Test Site Reports
 - 1. ASCS Land Use Inventory
 - 2. ASCS Photographs
 - 3. ASCS Yield Determination
 - 4. ASCS Periodic Observations

5. Test Site Assessment Reports
 6. Aircraft Photographs
 7. Synoptic Weather Data
- d. System Usage Reports
 - e. All other subsystem reports not previously identified
 - f. All intersubsystem reports and products

5.1.1.3 SPE-RI input parameters.- Associated with each report type or data product that SPE-RI will status and track are certain key parameters that uniquely identify each item. In addition to utilizing these keys for identification purposes, SPE-RI will perform various sorts on the keys in order to generate the status report types required by SPE-RI users. Those keys established to date include the following:

1. Type of report or data product
2. Number or other identification
3. Date
4. Media
5. Segment(s), zones, regions, or countries involved
6. Good/no-good code
7. Releasability code
8. Releasability downgrading information
9. Other keys TBD

5.1.2 Statusing and Tracking of Reports

5.1.2.1 Background.- The SPE-RI intends to compile master schedules of reporting types to be generated and to monitor and report on the timeliness of reports generation and distribution.

5.1.2.2 Inputs required.- (Req'd. by SPE-RI; Cat. 1; Impl. resp.: all subsystems, RT&E, ASVB staff). Each subsystem and the RT&E are to identify (a) the type, frequency, format, and need dates of reports required as inputs, and (b) the type, frequency, format, and anticipated completion dates of reports generated as outputs.

5.1.2.3 Reports between subsystems.- (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS). All reports between subsystems are defined as flowing through ISRRS. ISRRS is to strip out and store in the data base for subsequent interrogation by SPE-RI information on the type, completion date, and format (hard copy, microfiche, etc.) of reports passing through ISRRS.

5.1.3 SPE-RI Data Base Interface (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS)

Catalog functions within the ISRRS data base should be structured to accommodate real-time interactive terminal access having capability to provide displays and hard copy of each type of subject report or product sorted per predetermined key parameters. The capability to provide selected reports automatically on a periodic basis is required. Batch mode processing with access to the historical data base or archived data is required. It should be noted that SPE-RI does not require report contents or products per se, but rather key parameter sorts of the subject report/product title and header information.

5.2 INTERIM SYSTEM

5.2.1 Phase I-C

5.2.1.1 Generic SPE-RI input requirements.- The requirements developed in section 5.1.1 apply for the phase I-C interim system.

5.2.1.2 Statusing and tracking of reports.- The requirements developed in section 5.1.2 apply for the phase I-C interim subsystem.

5.2.2 Phase I-D

All requirements developed in section 5.2.1 apply.

6.0 SUBSYSTEM OUTPUT REQUIREMENTS

Outputs from the SPE-RIS function will be provided to other LACIE elements as defined in the following subparagraphs.

6.1 FULL-UP SYSTEM

6.1.1 System Performance Evaluation - Reports Integration

The SPE-RI must be responsive to queries for status data from all levels of management including, but not limited to, Project Management, EOD Data Management, Research and Development Management, and all subsystems managers. The SPE-RI, per se, has no specific output product; the "product" is a display or printed listing showing the status of report generation of the other subsystems that were fed into the RIS Data Base via ISRRS.

6.1.2 SPE-RI Output Products

The SPE-RI will generate upon demand or periodically several predefined Status Summary Reports. These reports will reflect historical or current status and tracking information relating to subsystem report and product types sorted per specified key parameters. Report and product types requiring SPE-RI activity are described in section 5.

Generic Status Summary Report types identified to date include the following:

1. Segment Classification Status
2. Segment Film Products Status
3. Manually Acquired Products Receipt Status
4. Intensive Test Site Summary Report Status
5. Electronically Aggregated Report Status

6. Monthly Crop Reports Status
7. Monthly Crop and Assessment of Accuracy and Precision Status Report
8. PFC Segment Film Products report status
9. Conventional/LACIE Crop report status
10. Other status summary reports TBD

6.2 INTERIM SYSTEM

6.2.1 Phase I-C

The requirements as depicted in section 6.1.1 apply equally to Phase I-C.

6.2.2 Phase I-D

All requirements developed in section 6.2.1 apply.

7.0 INTERFACE DOCUMENTS REQUIREMENTS

Each implementing organization will comply with the interface requirements specified in the following documents.

7.1 INTERCENTER CONTROL DOCUMENTS

Copies are required of all Intercenter Control Documents when finalized.

7.2 INTERFACE CONTROL DOCUMENTS

Copies of all Interface Control Documents for each subsystem are also required when generated or updated.

8.0 OPERATIONAL REQUIREMENTS AFFECTING THE SUBSYSTEM DESIGN

The operational requirements of this subsystem vary depending on the mode of operation and the data base(s).

8.1 THROUGHPUT REQUIREMENTS

Four distinct categories of queries/jobs can be identified: interactive, real-time; interactive, monthly accumulations; interactive, demand; and batch jobs.

8.1.1 Interactive, Real-Time (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS)

Queries against the ISRRS data base will be initially made 6 to 8 times per day in Phase I-C with an anticipated increase to approximately 10 to 12 times per day by the "fully operational" system.

8.1.2 Interactive, Monthly Accumulation (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS)

These queries against the ERAS monthly accumulation data base will initially be made 4 to 5 times per day in Phase I-C with an anticipated increase to approximately 15 to 16 times per day by the "fully operational" system. This increase will handle queries of reports status throughout the current month. Automatic batch runs to copy the daily reports status from the ISRRS data base to the ERAS monthly accumulation data base are required.

8.1.3 Interactive, Demand

Queries and data manipulations to be performed from the graphics terminal will require reading the data from historical tapes. These requirements must be initiated with the Phase I-C system.

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8.1.3.1 Historical data base (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS).- The historical data base will be an accumulation of the monthly data for annual periods. Aggregation of the monthly data into quarterly (and later, semi-annual and annual aggregations) is required. Initially, such queries will be made 2 to 3 times per month in the Phase I-D with an anticipated decrease to 1 to 2 times per quarter by the "fully operational" system. The quantity of each type of report will be totaled for each subsystem to compile tabular displays/printouts. The compilation of graphics (bargraphs and line charts) representing these data is also required.

8.1.3.2 Subsystem requirements (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS).- All subsystems are required to accumulate statistical data including CPU + I/O times, manhours, and budgetary data for the Performance Assessment Staff evaluations and trend analysis. Totaling of each type item by subsystem is required to compile tabular displays/printouts and for the compilation of graphics similar to those cited in paragraph 8.1.3.1. Initially, such compilations are required of the Phase I-C system at the rate of 1 to 2 per month per subsystem (e.g., 8 to 16 total) and becoming 4 to 5 per quarter per subsystem by the "fully operational" system.

8.1.4 Batch Jobs

Batch jobs for this subsystem fall into two categories - automatic jobs and "demand" initiated jobs (directed from the remote terminal).

8.1.4.1 Automatic batch jobs (required by Phase I-C) (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS).- Automatic copying of the daily accumulation of the reports status from the real-time ISRRS data base into the reports integration data base (disc-to-disc) is required at the close of business each day. Additionally, the status of the daily reports is to be listed and routed to the reports integration by the means TBD.

Automatic copying of the current months' reports integration data base for historical purposes is required at the close of business on the last working day of each month. Provisions

to insure accurate transfer of data from the current data base to the historical data base prior to destroying the current data base shall be made.

8.1.4.2 "Demand" jobs (required by Phase I-C) (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS).-- Aperiodically, the results of queries and tabulations of statistical data will be too lengthy to print economically at the remote terminal. The capability of initiating a batch job from the remote terminal to print such data on the computer's high-speed printer is required. Frequency of such requests is estimated to be one time per week by the Phase I-C system with an anticipated increase of 2 to 3 per week by the "fully operational" system.

8.2 RESPONSE TIME

(Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS)

Response to interactive queries of 5 to 6 seconds is required. When demand tapes are required, a "wait" time not to exceed 5 minutes for operator tape location, mounting, and temporary disc area loading is acceptable. Display of statistical data compilations requires response times of 10 to 12 seconds for either tabular or graphic data. A 24-hour response time to batch job printouts is required whether or not the job is initiated by cards or from a remote terminal.

8.3 RELIABILITY REQUIREMENTS

Provisions to insure accurate transfer from the current working data base into the historical data base shall be made prior to destroying current data base entries.

8.4 SECURITY REQUIREMENTS

A LACIE security plan will be prepared by each organization designated with implementation responsibility. The plan for each implementing organization will define the specific measures that will be utilized by that organization to comply with the LACIE security requirements. The LACIE security

requirements will be defined by USDA and will be forwarded to the implementing organizations on receipt by the LACIE project manager. Each implementing organization will submit its plan for approval to the LACIE Level III change board within 90 days after its receipt of the USDA requirements. Operational security requirements are categorized as sensitive data security, data entry/changeability security, and files integrity.

8.4.1 Sensitive Data Security

The ERAS will contain reference to sensitive reports status including a releasability code; however, all sensitive data per se are being handled in the ISRRS. The SPE-RI, therefore, has no "sensitive data" storage requirements for this category of security measures.

8.4.2 Data Entry/Changeability Security (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS)

All initial data entry into the reports integration ERAS is the result of report statusing by the ISRRS. The SPE-RI will require the capability to change some data in individual records, to delete some records, and to add some records to the ERAS. An example of changes includes the downgrading of sensitive reports - when downgraded and upon what authority. This downgrading will usually be required against specific, historical tape records but could also occur against the current data base. Data entry/changeability, therefore, should be limited to status only parameters.

8.5 DELIVERY REQUIREMENTS

Report status printouts will be generated daily and can be picked up from a centrally located box as designated by ISRRS within JSC Building 17 not more than 24 hours after generation. Periodic courier service is required for any interbuilding transfer of computer printouts.

8.6 QUALITY CONTROL REQUIREMENTS

The ISRRS is expected to exercise data quality control electronically of all data entry. The SPE-RI will establish a procedure to check the data visually in order to spot disparities and to coordinate corrections with ISRRS.

8.7 OTHER OPERATIONAL REQUIREMENTS

The SPE-RI does not anticipate any other operational requirements at this time. A LACIE quality assurance plan will be prepared by each organization designated with implementation responsibility. The plan will cover a complete definition of all quality assurance functions that will be implemented to assure maintenance of adequate quality levels. Each plan will be submitted for approval to the LACIE Level III change board within 90 days after requirements are baselined.

9.0 SUBSYSTEM VERIFICATION REQUIREMENTS

Each organization designated with implementation responsibility shall prepare a LACIE Verification Plan including a complete definition of the verification functions proposed for verification of the portion of LACIE for which they are responsible. Each organization shall submit a plan for approval to the LACIE Level III change board within 90 days after the requirements documents are baselined. As a minimum the verification plan shall include elements related to the SPE-RI effort. However, at present the SPE-RI verification requirements are TBD.

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10.0 TEST AND EVALUATION

10.1 SPE-RI REQUIREMENTS

(Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS)

The SPE-RI will require that a minimum of one month's accumulation of highly controlled test data be entered into the ISRRS one month after the start of the Phase I-C operations.

1. Five report status records, each containing five segments for each type of electronically generated report per day.
2. Two report status records for each report type which is manually generated or received per day.
3. Daily printout of report status test data (input format) for comparison with output data formats (displays).
4. Weekly printout of report status test data as aggregated on the ERAS data base for evaluating aggregated retrievals and display.
5. Demonstrate ability to correctly copy ISRRS daily reports status into the ERAS data base area daily. Also demonstrate the ability to correctly copy the ERAS monthly accumulation into the historical data base.
6. Printout of the month's aggregation of report status data from both the real-time and the historical data bases for comparison.
7. Demonstration of timely ability to "clear" or "erase" the monthly ERAS data base and the start of accumulation of the next month's worth of data.

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10.2 ENTERING AND ACCUMULATING
DAILY REPORTS STATUS DATA
(Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS)

All daily reports status data must be entered and accumulated as generated ("live" data) at the earliest possible time in the Phase I-C operations. An evaluation (report of the subsystem to this point) should be completed using a minimum of 2 weeks' data accumulation, and a formal report of the evaluation shall be due not more than 2 weeks later.

10.3 REQUIREMENTS AFTER THE FIRST 6 MONTHS'
ACCUMULATION OF DATA
(Cat. 2; Impl. resp.: SPE-RI)

When 6 months' data have been accumulated, SPE-RI will require:

1. Complete alphabetical dump of the Reports Status History data base for the previous 6 months operations.
2. Demonstration of the software ability to tabularize and accumulate totals for each segment used and upward aggregation reports (quarterly and semi-annual), to print the tabularized data, and to generate the required corresponding histograms on the graphics terminal.

10.4 SUBSEQUENT DATA ACCUMULATION
(Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS and RTEB)

All "live" data collection and accumulation will continue throughout the evaluation and subsequent time periods. A separate historical data base may be used to accumulate the second 6 months' data provided that this tape and the first can later be merged for an annual aggregation, statistical manipulations, and generation of histograms. Completion of an evaluation report of the subsystem to this point is required not later than the last working day of the seventh month of operations.

10.5 REQUIREMENTS FOR HANDLING A 1-YEAR ACCUMULATION OF DATA

When a full year's data have been accumulated, SPE-RI will require demonstration of the software to provide an annual Report Status aggregation, all statistical manipulations, tabularizations, and generation of all histograms previously cited, but for the year's operations.

10.5.1 Documentation of Subsystems Input and Output Formats (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS and RTEB)

The SPE-RI will require documentation of all subsystems input and output report formats including type(s) of media used to store/convey all final products. Written notification to SPE-RI is required to confirm that the system's ability to produce the report formats which must be operational to date has been verified.

10.6 FINAL EVALUATION REPORT (Req'd. by SPE-RI; Cat. 2; Impl. resp.: ISRRS and RTEB)

The final evaluation report is to be completed by the last day of the thirteenth month of operations.

11.0 RESEARCH REQUIREMENTS

11.1 HARDWARE

The availability and connectability of a compatible graphics terminal and terminal printer needs to be researched, determined, and ordered in sufficient time to be installed prior to the beginning of Phase I-C operations.

11.2 SOFTWARE

(Req'd. by SPE-RI; Cat. 1; Impl. resp.: NASA/DSAD)

The availability and applicability of existing software to generate the ERAS records automatically, to provide a means for entering receipts of manually generated data, to interactively change erroneous records, and to retrieve and display the status of all reports needs to be researched.

The availability and applicability of existing software to count (accumulate) statistical data from all subsystems, to tabularize the results, and to generate/compile histograms from the data needs to be researched.

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